Three Physical Sciences graduate students receive 2024-2025 Los Alamos National Lab research fellowship

The fellows are studying everything from quantum science to climate change.
Thursday, September 26, 2024
UCI Physical Sciences Communications



The three new fellows, from left to right: David Dang, Tyler Smith, Lili Manzo.

Picture Credit:
UC Irvine

The UC Irvine School of Physical Sciences is working with Los Alamos National Laboratory (LANL) by providing research opportunities for graduate students through the UCI-LANL-SoCal Hub graduate fellowship program. Driven by a shared commitment to scientific innovation, the program is producing trailblazing research at the lab where J. Robert Oppenheimer developed the atomic bomb.

The UCI-LANL-SoCal Hub graduate fellowship program allows UC Irvine graduate students to work directly with leading scientists at LANL. Over the past two years, five students in the School of Physical Sciences have participated, immersing themselves in high-impact research projects alongside their UCI faculty advisors and LANL mentors. Each fellow receives one year of funding to support their research with LANL.

"With expertise in areas such as climate modeling, fusion energy, and quantum systems; the research in the School of Physical Sciences has a large overlap with core science missions at Los Alamos National Laboratories," said Associate Dean of Graduate Studies Franklin Dollar. "One of the strongest ways to form lasting ties is through collaborative research driven by our graduate students, the experiences that they gain through this fellowship and the network of lab scientists will open new career paths and research partnerships."

The 2024-2025 UCI-LANL-SoCal Hub graduate fellows from the School of Physical Sciences are:

David Dang, Department of Physics & Astronomy

Lili Manzo, Department of Earth System Science

Tyler Smith, Department of Physics & Astronomy

Each fellow's research with LANL highlights the opportunities fostered by the program. Below are descriptions of their pioneering research endeavors.

Pushing quantum science into the future

David Dang is a Ph.D. student in the lab of Professor Howard Lee in the UC Irvine Department of Physics & Astronomy who studies the physical properties of nano-scale materials. "For my project, my doctoral advisor at UCI, Professor Howard Lee, and I are collaborating with Dr. Hou Tong-Chen, a world-renowned expert on

nonlinear optics at LANL," said Dang. "Together, we are exploring a new class of AI-designed materials for photonic quantum computing, combining the fields of nano-photonics and machine learning."

Unraveling cosmic mysteries

Tyler Smith is a Ph.D. student working with Professors Manoj Kaplinghat and Tim Tait in the UC Irvine Department of Physics & Astronomy. At LANL, Smith will be partnering with Dr. Luke Roberts to find out what subatomic particles called neutrinos can reveal about exploding stars. "I'll be working on exploring the dynamics of supernova explosions via neutrino detection, using detectors like the Super Kamiokande in Japan and the upcoming JUNO and DUNE neutrino experiments in China and the U.S.," Smith said. "Specifically, we are interested in understanding the energy dynamics of protoneutron stars, determining whether the remnant is a neutron star or black hole, and determining if the supernova shock is revived by a neutrino burst."

Researching the intricacies of climate change

Lili Manzo is a Ph.D. student working with Professor Charlie Zender in the UC Irvine Department of Earth System Science on improving how computer models that simulate climate change represent physical processes happening in nature. "Specifically, I am working on improving the current representation of long wave energy transfer through the atmosphere," said Manzo. "Global warming is driven by an increase in atmospheric longwave energy absorption, so we hope that my modifications to the model will make predictions of future climate change more accurate. We also hope that my modifications will be adopted by the official version of a popular climate model called E3SM as well as other climate models."

Looking Ahead

UC Irvine's partnership with the Los Alamos National Laboratory is providing world-class research opportunities for UC Irvine graduate students. The School of Physical Sciences is committed to fostering long-term collaborations that drive groundbreaking research and innovations that drive knowledge forward.

News Briefs
Physics & Astronomy
Earth System Science
Chemistry

The Future of Fundamental Science
Climate Change
View PDF